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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
KESSLER, CHRISTOPHER S	

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1793	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/802,141	SONTI ET AL.	
	Examiner	**Art Unit**	
	CHRISTOPHER KESSLER	1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _05 December 2008_.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _19,20,22-32,35,37-39 and 41-47_ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _19,20,22-32,35,37-39 and 41-47_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 5 December 2008 has been entered.

Status of Claims

1. Responsive to the amendment filed 4 March 2008, Claims 19, 35, 41, and 43 are amended. Claims 19-20, 22-32, 35, 37-39 and 41-47 are currently under examination.

Status of Previous Rejections

2. Responsive to the amendment filed 4 March 2008, the independent claims have been amended. New grounds for rejection are presented.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 19-20, 22-24, 27-30 and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent 5,451,275 issued to Amateau et al. (hereinafter “Amateau”), in view of U. S. Patent 6,729,171 issued to Ladousse et al. (hereinafter “Ladousse”).

Regarding claim 19, Amateau describes the invention substantially as claimed. Amateau describes a method comprising the steps of

> (a) heating a metal workpiece in the form of a near net shaped gear blank having gear teeth surfaces above its critical temperature to obtain an austenitic structure throughout its surfaces;
>
> (b) isothermally quenching the workpiece at a rate greater than the critical cooling rate of its surfaces to a uniform metastable austenitic temperature just above the martensitic transformation temperature;
>
> (c) rolling the gear teeth surfaces of the workpiece to a desired outer peripheral profiled shape between opposed dies, each die having an outer peripheral profiled surface, while holding the workpiece at the uniform metastable austenitic temperature. the gear teeth surfaces undergoing densification. plastic deformation and strengthening as a result of the rolling operation; and
>
> (d) cooling the workpiece through the martensitic range to thereby

harden the surfaces of the gear teeth.

More specifically, in claim 1, Amateau describes;

(b) heating a workpiece in the form of a near net shaped gear blank having carburized gear teeth surfaces above its critical temperature to obtain an austenitic structure throughout its carburized surfaces;

(c) isothermally quenching the gear blank at a rate greater than the critical cooling rate of its carburized surfaces to a uniform metastable austenitic temperature just above the martensitic transformation temperature;

(d) holding the temperature of the gear blank at said uniform temperature while rolling the gear teeth surfaces between a pair of diametrically opposed rolling gear dies to a desired shape before martensitic transformation occurs; and

(e) cooling the gear through the martensitic range for the carburized gear surfaces to harden the gear surfaces.

Amateau does not disclose wherein the workpiece is a powder metal workpiece. Amateau describes roll-finishing the gear (see Title, for example). Amateau describes wherein the gear is a high-performance gear and meets the dimensional tolerances for AGMA gears (see col. 6). Thus, the limitations of rolling to a shape from tooth tip to tooth root on both sides of the gear tooth so that the tooth has dimensional tolerances for power transmission gearing are met.

Amateau does not describe wherein the dies have a powder metal gear tooth finishing surface configured to geometrically finish the powder metal surface of each tooth during rolling. Amateau does not disclose that the near net shape blank is a powder metal blank. Amateau describes that the blank is " hobbed or otherwise formed using conventional techniques” (see col. 6).

Ladousse teaches a method of rolling gears from powder metal sintered blanks (see Abstract). Ladousse teaches that the method uses dies (tools) with a peripheral geometry designed to impart the appropriate shape to the powder metal blank (see cols. 1-3, cols. 11-12). Ladousse teaches that this may be done with opposed dies (tools) (see cols. 3-6, Figs. 1-5). Ladousse teaches that the dies have the desired geometry in order to obtain the desired shape of the part (see col. 6). Ladousse teaches that the method may be used to size or finish the gear shape (see cols. 11-12), thus meeting the limitation of each die having an outer peripheral powder metal gear tooth finishing surface configured to geometrically finish the powder metal surface of each tooth during rolling. Ladousse teaches that the use of sintered powder blanks is desirable because these are “very economical to produce” (see col. 7).

It would have been obvious to one of ordinary skill in the art at time of invention to substitute a powder metal gear blank as taught by Ladousse for the hobbed gear blank disclosed in Amateau, because Ladousse teaches that the powder metal blanks are economical to produce (see col. 7).

Regarding claim 20, additional steps (e) and (f) claimed by applicant would be inherent in step (d) of Amateau shown above, if that step were performed as stated above on a powder metal gear blank (see MPEP §2112). Compaction under high temperature (hot working) is well established in the art to cause pores of a sintered PM workpiece to collapse and to cause the workpiece to plastically deform. Ladousse further teaches that the gear is compacted and density changes during the compaction process (see cols. 7-13).

Regarding claim 22, Amateau and Ladousse are applied to the claim as stated above. Densification is well known in the art to be the primary goal of sintering operations, and is thus an inherent part of sintering (see MPEP §2112).

Regarding claim 27, Amateau is applied to the claim as stated above. Ladousse discloses wherein the powder metal workpiece is pressed and sintered prior to rolling (see cols. 1-2).

Regarding claim 23, Ladousse discloses wherein the powder metal workpiece is pressed and sintered prior to rolling (see cols. 1-2), meeting the definition of single pressing the workpiece.

Regarding claim 24, Ladousse discloses wherein the powder metal workpiece is pressed and sintered prior to rolling (see cols. 1-2), meeting the definition of single sintering the workpiece.

Regarding claim 28, Amateau is applied to the claim as stated above. Ladousse teaches that common densification thicknesses are described in the art which fall within the claimed range (see cols. 8-9). Ladousse further teaches that the densification thickness is chosen by one of ordinary skill in the art depending on the density and material of the blank, and the geometry of the dies (see cols. 10-12). Thus densification thickness is a results-effective variable and would have been optimized by one of ordinary skill in the art without undue experimentation. Applicant is further directed to MPEP 2144.05.

Regarding claim 29, Amateau discloses fabricating a parallel axis gear (see col. 2, lines 9-44).

Regarding claim 30, Amateau discloses fabricating helical gears and spur gears (see col. 2, lines 9-44).

Regarding claim 47, Amateau and Ladousse are applied to the claim as stated previously. Amateau in view of Ladousse does not teach wherein the root/fillet region of the gear teeth are compacted with a rolling die having a tip radius from about 0.014 to about 0.018 inches.

Ladousse teaches that the tool may have teeth (see cols. 11-12). Ladousse teaches that the teeth are homologous to the gear being made (see cols. 11-12). Thus, the tip radius is a results-effective variable with regard to the geometry of the gear to be formed, and would have been optimized by one of ordinary skill in the art without undue experimentation. Applicant is further directed to MPEP 2144.05.

5. Claims 25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Amateau in view of Ladousse as applied to the claims above, and further in view of Applicant's Admitted Prior Art.

Regarding claim 25, it is well known in the art to combine sintering and hardening operations into an integrated operation. It is well known in the art to introduce a hardening or carburizing atmosphere during sintering. For example, Applicant has shown "atmospheric sintering" in Fig. 6 of the instant specification, which is directed to prior art powder metallurgy processes. It would thus be obvious to one of ordinary skill

in the art to use an integrated sintering and hardening operation during atmospheric sintering in order to save time and money in processing.

Regarding claim 26, it is well known in the art to combine sintering, hardening and carburizing operations into an integrated operation. It is well known in the art to introduce a hardening or carburizing atmosphere during sintering. For example, Applicant has shown “atmospheric sintering” in Fig. 6 of the instant specification, which is directed to prior art powder metallurgy processes. It would thus be obvious to one of ordinary skill in the art to use an integrated sintering, carburizing and hardening operation during atmospheric sintering in order to save time and money in processing.

6. Claims 31 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Amateau in view of Ladousse, in further view of U.S. Patent 4,972,735 issued to Torii et al. (hereinafter “Torii”).

Amateau and Ladousse are applied to the claims as stated previously. Amateau and Ladousse do not specifically teach a method of making an intersecting axis gear, wherein the intersecting axis gear includes at least one of a straight bevel gear, a spiral bevel gear, a hypoid gear, a worm gear, and a worm-wheel gear.

However, it would have been obvious to one of ordinary skill in the art to have made an intersecting axis gear with the invention.

For example, Torii teaches a wrist assembly for an industrial robot (se Abstract). Torii teaches wherein the wrist assembly includes power transmission mechanism (see

Abstract). Torii further teaches wherein the power transmission mechanism includes a hypoid gear (see Abstract, Figure 2, Col. 2, or claim 2, for example).

It would have been obvious to one of ordinary skill in the art at time of invention to substitute a powder metal gear blank as taught by Ladousse for the hobbed gear blank disclosed in Amateau, because Ladousse teaches that the powder metal blanks are economical to produce (see col. 7), and to use the method to manufacture the hypoid gear of Torii in order to provide a gear for making an improved wrist assembly capable of obtaining a desired reduction gear ratio while decreasing the number of gears needed for transmitting power from the motor to the second wrist portion and the third wrist portion, as taught by Torii (see col. 2).

7. Claims 35, 37-39 and 41-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent 6,779,270 issued to Sonti et al. (hereinafter “Sonti”), in view of Ladousse.

Regarding claim 35, Sonti teaches the invention substantially as claimed. Sonti teaches in claim 1,

1. A method of producing a full form net shape roll finished contacting machine element from a near net shape workpiece of wrought or forged steel having an initial outer peripheral contoured surface and including a plurality of teeth, each having a tooth flank with a nominally involute surface and a root/fillet region with a trochoidal surface, the method comprising the steps of:

rotatably supporting on a first axis a rolling die having an outer peripheral contoured surface extending between generally parallel spaced lateral surfaces transverse to the first axis, the rolling die including a plurality of teeth, each including a tooth flank with opposed involute surfaces and a tooth tip surface;

rotatably supporting the workpiece on a second axis distant from and parallel to the first axis;

advancing the rolling die in an in-feed direction generally perpendicular to the first and second axes such that the rolling die meshingly engages with the workpiece,

rotating the rolling die about the first axis while engaged with the workpiece;

while performing step (d), maintaining continuous conjugacy between the rolling die and the workpiece with the involute surface of each tooth of the rolling die engaging the involute surface of a mating tooth of the workpiece and the tooth tip of the rolling die engaging the trochoidal root/fillet surface between adjacent mating teeth of the workpiece to effect material flow along the outer peripheral contoured surface;

continuing to advance the rolling die in the in-feed direction thereby deforming the surface of each tooth flank and of a corresponding root/fillet region until a final net shape of each tooth and root/fillet region is achieved, and

continuing to perform all of the preceding steps with the rolling die and workpiece meshingly engaged, thereby deforming the involute and trochoidal root/fillet surfaces of all of the teeth of the workpiece resulting in a final net shaped machine element.

Sonti describes wherein the gear is a high-performance gear and meets the dimensional tolerances for AGMA gears (see cols. 4-5). Thus, the limitations of rolling to a shape from tooth tip to tooth root on both sides of the gear tooth so that the tooth has dimensional tolerances for power transmission gearing are met.

Sonti does not describe wherein the dies have a powder metal gear tooth finishing surface configured to geometrically finish the powder metal surface of each tooth during rolling. Sonti does not disclose that the near net shape blank is a powder metal blank. Sonti describes that the blank is " hobbed or otherwise formed using conventional techniques" (see cols. 4-5).

Ladousse teaches a method of rolling gears from powder metal sintered blanks (see Abstract). Ladousse teaches that the method uses dies (tools) with a peripheral geometry designed to impart the appropriate shape to the powder metal blank (see cols. 1-3, cols. 11-12). Ladousse teaches that this may be done with opposed dies (tools) (see cols. 3-6, Figs. 1-5). Ladousse teaches that the dies have the desired geometry in order to obtain the desired shape of the part (see col. 6). Ladousse teaches that the method may be used to size or finish the gear shape (see cols. 11-12), thus meeting the limitation of each die having an outer peripheral powder metal gear tooth finishing surface configured to geometrically finish the powder metal surface of each tooth during rolling. Ladousse teaches that the use of sintered powder blanks is desirable because these are "very economical to produce" (see col. 7).

It would have been obvious to one of ordinary skill in the art at time of invention to substitute a powder metal gear blank as taught by Ladousse for the forged gear blank disclosed in Sonti, because Ladousse teaches that the powder metal blanks are economical to produce (see col. 7).

The limitation of the gear teeth surfaces undergoing densification, plastic deformation, and strengthening as a result of the rolling and sliding operation. Would be

inherent in the process of Sonti shown above, if that step were performed as stated above on a powder metal gear blank (see MPEP §2112). Compaction under high temperature (hot working) is well established in the art to cause pores of a sintered PM workpiece to collapse and to cause the workpiece to plastically deform. The closing of pores is further known to cause strengthening in powder metal workpieces.

Regarding claim 37, additional steps (i) and (j) claimed by applicant would be inherent in the process of Sonti shown above, if that step were performed as stated above on a powder metal gear blank (see MPEP §2112). Compaction under high temperature (hot working) is well established in the art to cause pores of a sintered PM workpiece to collapse and to cause the workpiece to plastically deform.

Regarding claim 38, Sonti further discloses a process in claim 2:

> 2. A method as set forth in claim 1 including the step, before step (c) of:
> advancing the workpiece in a through-feed direction parallel to the first and second axes such that the outer peripheral contoured surface of the workpiece engages the outer peripheral contoured surface of the rolling die and continues to advance until the workpiece is positioned substantially coextensive with the rolling die in the through-feed direction.

Regarding claim 39, Sonti further discloses a process in claim 3:

3. A method as set forth in claim 2 wherein step (e) includes the steps of:

simultaneously with step (g) after the workpiece and rolling die are substantially enmeshed, advancing the rolling die within a plane containing the first and second axes, in an in-feed direction substantially perpendicular to the first and second axes until the outer peripheral contoured surface of the rolling die engages the outer peripheral contoured surface of the workpiece at a near net shaped center distance establishing an initial center distance between the first and second axes when the workpiece and the rolling gear die are initially engaged; and

continuing to advance the workpiece in the in-feed direction by an additional increment of center distance thereby deforming the profile surfaces of each tooth resulting in final net shape of the teeth.

Regarding claim 41, Applicant has stated in the specification, pages 22-23, that the difference between the technique as claimed for making the rolling dies and conventional techniques known in the art of making rolling dies is that “the die tooth profile maintains conjugacy in the root/fillet area of the gear tooth in addition to the area of active contact” (p. 22). Sonti teaches “in order to maintain a constant anguar velocity, it is therefore necessary to produce on the rolling dies a tooth profile which is conjugate to the finished gear during all phases of the engagement” (see col. 6, lines 55-59). Sonti further discloses steps (a)-(h) of claim 41 (see col. 6, line 24- col. 8, line 12).

As for steps (i)-(p) of claim 41, Sonti and Ladousse are applied to the claim as stated in the claim rejections above.

Regarding claim 42, additional steps (q) and (r) claimed by applicant would be inherent in the process of Sonti shown above, if that step were performed as stated above on a powder metal gear blank (see MPEP §2112). Compaction under high temperature (hot working) is well established in the art to cause pores of a sintered PM workpiece to collapse and to cause the workpiece to plastically deform.

Regarding claim 43, Sonti teaches the invention substantially as claimed in claim 6:

6. A method of producing a full form net shape roll finished contacting machine element from a near net shape workpiece of wrought or forged steel having an initial outer peripheral contoured surface and including a plurality of teeth, each having a tooth flank with a nominally involute surface and a root/fillet region with a trochoidal surface, the method comprising the steps of:

rotatably supporting on first and second generally parallel spaced axes, first and second rolling dies, each having an outer peripheral contoured surface extending between generally parallel spaced lateral surfaces transverse to the first axis, each rolling die including a plurality of teeth, each tooth including a tooth flank with opposed involute surf aces and a tooth tip surface;

rotatably supporting the workpiece on a third axis distant from and parallel to the first and second axes;

advancing the first and second rolling dies, within a common plane generally containing the first, second, and third axes in respectively opposite in-feed directions generally perpendicular to the third axis until the rolling die meshingly engages with the workpiece,

rotating the rolling dies at a constant angular velocity about their associated first and second axes while engaged with the workpiece;

while performing step (d), maintaining continuous conjugacy between each of the rolling dies and the workpiece with the involute surface of each tooth of each of the rolling dies engaging the involute surface of a mating tooth of the workpiece and the tooth tip of each of the rolling dies engaging the trochoidal root/fillet surface between adjacent mating teeth of the workpiece to effect material flow along the outer peripheral contoured surface;

continuing to advance each of the rolling dies in the in-feed direction thereby deforming the surface of each tooth flank and of a corresponding root/fillet region until a final net shape of each tooth and of each root/fillet region is achieved, and

continuing to perform all of the preceding steps with the rolling dies and workpiece meshingly engaged, thereby deforming the involute and trochoidal root/fillet surfaces of all of the teeth of the workpiece resulting in a final net shaped machine element.

Ladousse is applied to the claim as stated above.

Regarding claim 44, additional steps (i) and (j) claimed by applicant would be inherent in the process of Sonti shown above, if that step were performed as stated

above on a powder metal gear blank (see MPEP §2112). Compaction under high temperature (hot working) is well established in the art to cause pores of a sintered PM workpiece to collapse and to cause the workpiece to plastically deform.

Regarding claim 45, Sonti further discloses in claim 7:

> 7. A method as set forth in claim 6 including the step, before step (c) of:
>
> advancing the workpiece in a through-feed direction parallel to the first, second, and third axes such that the outer peripheral contoured surface of the workpiece engages the outer peripheral contoured surface of each of the rolling dies and continues to advance until the workpiece is positioned substantially coextensive with the rolling dies in the through-feed direction.

Ladousse is applied to the claim as stated in rejections above.

Regarding claim 46, Sonti further discloses in claim 8:

> 8. A method as set forth in claim 7 wherein step (c) includes the steps of:
>
> simultaneously with step (g) after the workpiece and rolling die are substantially enmeshed, advancing the rolling die within a plane containing the first and second axes, in an in-feed direction substantially perpendicular to the first and second axes, until the outer peripheral contoured surface of the rolling die engages the outer peripheral contoured surface of the workpiece at a near net shaped center distance establishing an initial center distance between the first and second axes when the workpiece and the rolling gear die are initially engaged; and
>
> continuing to advance the workpiece in the in-feed direction by an additional increment of center distance thereby deforming the profile surfaces of each tooth resulting in final net shape of the teeth.

Ladousse is applied to the claim as stated in rejections above.

Response to Arguments

Applicant's arguments filed 5 December 2008 have been fully considered but they are not persuasive.

Applicant has argued at pp. 16-18 of the Remarks filed 5 December 2008 that the disclosure of Ladousse of "homologous" teeth in the tooling used to form the gear “by definition do not have any die tooth profile modification which results in a rolling of the blank where the shape of the gear teeth is substantially different from the nominally involute gear tooth shape that is desired when rolling gear teeth.” However, there is no such definition of the homologous teeth in Ladousse. Ladousse several times describes that the geometry of the shaping tools is designed in order to obtain the desired shape of the gear (see Summary, or col. 6 for example). Further, this is not what is claimed in the instant claims. In response to applicant's argument that the references fail to show certain features of applicant’s invention, it is noted that the features upon which applicant relies (i.e., die tooth profile modification which results in a rolling of the blank where the shape of the gear teeth is substantially different from the nominally involute gear tooth shape that is desired when rolling gear teeth) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Still further, applicant has stated that these features are known in the art, but has provided no evidence to support these statements, only argument.

In the remarks of 5 December 2008, at page 18, applicant states,

> **All that is disclosed in Ladousse with respect to final shaping is at column ii, lines 18-22 of Ladousse which recites that in a final phase 86 of operation (b), the load is then controlled (F) for one or more successive phases, so that its change continues to observe a predefined cycle, until a final relative position (Xb) of the tools and the part is reached which tallies with the final dimensions of the part “for this stage of manufacture.”**

Here, applicant has applied a quotation from column 6 of Ladousse to the information described in columns 11-12. The paragraph in column 6 describes that the part should be able to withstand the force imparted at each stage of its manufacture in order to create the desired deformation at said stage. The description of cols. 11-12 describes the step of rolling the gear, including "a final sizing phase," as was cited in the rejection. Applicant has stated that the final sizing relates only to roundness of the gear. However, such is not the case. Ladousse explicitly states that roundness is an example of the dimensional criteria that may be met.

Applicant argues that the gear made by the method of Ladousse would require further processing, such as a finish machining operation. The examiner notes that these features are not described by Ladousse. Applicant states that the teaching of Ladousse that excessive work hardening should be avoided provides evidence that a further hardening step would be required. However, Ladousse explicitly teaches that work hardening occurs, and simply teaches that *excessive* work hardening is avoided such that it is possible to plastically deform the blank at loads that will not destroy the blank (see cols. 12-13). Ladousse further teaches that the work hardening inevitably occurs, is carefully controlled, and that it may be desirable in some cases (see cols. 8-10 and 12-13).

Applicant has stated that the method of Ladousse would not be capable of meeting the dimensional tolerances required for power transmission components. However, applicant has provided no evidence to support these statements, only argument.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHRISTOPHER KESSLER whose telephone number is (571)272-6510. The examiner can normally be reached on Mon-Fri, 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Roy King/
Supervisory Patent Examiner, Art Unit 1793

csk